

PATENT ABSTRACTS OF JAPAN

(11)Publication number : **09-248213**

(43)Date of publication of application : **22.09.1997**

(51)Int.Cl.

A45D 44/22

A61H 23/02

B06B 1/02

(21)Application number : **08-007610**

(71)Applicant : **HOOMAA ION
KENKYUSHO:KK**

(22)Date of filing : **19.01.1996**

(72)Inventor : **KAMIYA SHOHEI
SUGIHARA YASUHIKO
OKADA ATSUHIKO**

(30)Priority

Priority number : **08 4267** Priority date : **12.01.1996** Priority country : **JP**

(54) **COSMETIC AND LEANING DEVICE APPLYING ULTRASONIC**

(57)**Abstract:**

PROBLEM TO BE SOLVED: To prevent side effects on an organism such as cytoclasis, etc., when a stop signal for an ultrasonic head is outputted from a sensor, by reducing or stopping ultrasonic stimulation irradiated from the ultrasonic head, based on the output.

SOLUTION: When sliding of an ultrasonic head on an organism is stopped and the dislocation of the ultrasonic head is stopped, the stop condition is detected by a stop detection sensor 3. That is, since the output by the stop detection sensor 3 becomes constant when the sliding force of the ultrasonic head on an organism is eliminated, if the constant condition is continued for 3-10 seconds, the sensor judges the ultrasonic head stopping the sliding on the organism and giving ultrasonic vibration at a same position and stops the actuation of an ultrasonic vibration circuit 12 by opening a DC power source switching circuit 12 by a control signal from a control circuit 14. Thereby, generation of side effects such as cytoclasis in an organism can be prevented.

Claims

[**Claim 1**] In cosmetics and a lean figure machine of ultrasonic application a living body is made to give an ultrasonic stimulus irradiated with an ultrasonic vibrator from an ultrasonic head which carries out an inner package to, When contact moving in respect of the living body of the above-mentioned ultrasonic head stops and a head stop signal is outputted from a sensor which

detects this stop, and this sensor, Cosmetics and a lean figure machine adapting an ultrasonic wave which makes it come to provide a control circuit which decreases or stops an ultrasonic stimulus irradiated from an ultrasonic head based on this output.

Detailed Description of the Invention

[0001]

[Field of the Invention] This inventions are the cosmetics and lean figure machine which uses an ultrasonic wave, and relate to the cosmetics and lean figure machine which made the security apparatus which can improve the safety to the human body at the time of use of its cosmetics and lean figure machine especially provide.

[0002]

[Description of the Prior Art] Giving an ultrasonic stimulus to the skin and the body and promoting the metabolic turnover of the skin or a fat as a means for canceling removal of the wrinkle of the skin, sag, etc. and obesity of the body, is known from the former.

[0003]According to the excitometabolism of this skin and fat, the beauty effect is raised by maintaining tension on the skin, changing into heat some fats which improve the activity of a living body's heat production and are accumulated into the body, and making it consume, etc.

[0004]And although there are a fixing method fix to the desired position of the skin, a body side, etc., and a head with a built-in ultrasonic vibrator is made to give as a means for making an ultrasonic stimulus give the skin and the body, and a translation method which moves as carry out rubbing of the above-mentioned head along the skin and a body side, In the head contact surface, the above-mentioned fixing method brings about a temperature sudden rise of a small area, and moreover, since control is difficult, ***** use of it is not carried out. Since it is used only in the range of very small intensity (ultrasonic output) $0.1 - 1 \text{ W/cm}^2$, and that output is weak and there are few effects, this fixing method is not usually used.

[0005]On the other hand, a translation method is moving contacting a head to the field of the skin and the body, and there is the feature that the wave motion with uneven output distribution is equalized. From the surface of a head, the moving range is suitable for a while, and from a big area to twice the stroke, supposing that it is as about about 5 cm comparatively brief -- each stroke -- ** of the next stroke -- weight **** -- it is made like, equalization of ultrasonic irradiation is attained, and, moreover, movement of a head is moved to a stroke direction and a right angle very slowly. Incidentally, the ultrasonic output intensity adopted with this translation method is $1-4\text{W/cm}^2$, and since it is employable by quite high intensity as compared with a stationary type, it can expect high cosmetics and the lean figure effect.

[0006]Then, if it is in the cosmetics and lean figure using ultrasonic energy, adoption of the translation method to which it is made to move grinding a head to living bodies, such as the skin and a body side, is suitable, and the cosmetics and lean figure machine of translation method adoption are publicly known in the former.

[0007]

[Problem(s) to be Solved by the Invention] However, if it is in the cosmetics and lean figure machine of this translation method adoption, it is always necessary to **** a head to living

bodies, such as the skin and a body side. That is, the influence which an ultrasonic stimulus has on a living body is the strength and time to the site of the stimulus. If quantity of stimulus with the product is exceeded, a cell will be destroyed, or a burn is produced. Therefore, if it is fitness stimulus strength, when a site of the stimulus always changes, stimulus time will become short and safety will be ensured.

[0008] Since it is such, heads are requirements with indispensable making it move to a living body. A motion of a head should stop, it is the same part and generating of the side effects that it is exciting for a living body when the prolonged ultrasonic irradiation for 3 to 10 minutes is made, for example, and the depths burn by cytolysis or frictional heat arises by friction between cells poses a problem.

[0009] Therefore, in order to prevent these problems, the skin interview tactile position of the ultrasonic head always had to be moved, and it was dangerous to use it of the handling of ultrasonic cosmetics and a lean figure machine, if it is not those who were well versed.

[0010] When movement to the living body of the ultrasonic head (vibrator cup) which was made paying attention to this thing and carries out the inner package of the ultrasonic vibrator is suspended, this invention, As you make it interrupted, it aims at offer of the cosmetics and lean figure machine of ultrasonic application which can prevent beforehand generating of whether the ultrasonic irradiation to the living body from the ultrasonic head is decreased, the cytolysis in a living body, or side effects, such as a depths burn.

[0011]

[Means for Solving the Problem] To achieve the above objects, in cosmetics and a lean figure machine of ultrasonic application a living body is made to give an ultrasonic stimulus irradiated with an ultrasonic vibrator in this invention from an ultrasonic head which carries out an inner package to, When contact moving in respect of the living body of the above-mentioned ultrasonic head stops and a head stop signal is outputted from a sensor which detects this stop, and this sensor, It is characterized by cosmetics and a lean figure machine adapting an ultrasonic wave which makes it come to provide a control circuit which decreases or stops an ultrasonic stimulus irradiated from an ultrasonic head based on this output.

[0012]

[Embodiment of the Invention] This invention is explained in detail based on the embodiment shown in Drawings below.

[0013] 1 is an ultrasonic head and this ultrasonic head 1, In the hand case 2, it is held so that displacement is possible, and between this hand case 2 and ultrasonic head 1, the stop detection sensor 3 which detects that displacement of the ultrasonic head 1 to that hand case 2 stopped is formed. This stop detection sensor 3 has a thing of various structures, for example, first the ultrasonic head 1, The ultrasonic cup 4 which is section machine shape, and the vibrator 5 attached to the inner bottom of this ultrasonic cup 4, It consists of the lid 6 laminated on the upper part opening edge of the ultrasonic cup 4, and via the elasticity objects 7, such as bellows, in the tip part of the aforementioned hand case 2, this ultrasonic head 1 is held so that displacement (rocking) is possible.

[0014] The light reflection plate 8 with which the above-mentioned stop detection sensor 3 is attached in the upper surface of the above-mentioned lid 6, It consists of the reflection type

optical sensor 9 which the above-mentioned light reflection plate 8 is approached, and is fixed to the hand case 2 and possesses a pair of light emitting device 9A and photo detector 9B, A stop (displacement) of the above-mentioned ultrasonic head 1 to the hand case 2 is detected by the above-mentioned stop detection sensor 3.

[0015]If it is in the light reflection plate 8 for making the beam irradiated from the light emitting device 9A reflect in the photo detector 9B, as shown in drawing 3, it has two or more concentric circle-shaped reflection parts 8A, and it is constituted so that a stop (displacement) of the light reflection plate 8 can be detected sensitively.

[0016]Drawing 4 shows other working example of the stop detection sensor 3, and this stop detection sensor 3, Magnetism is used, it consists of the magnet 10 fixed to the lid 6, and the magnetic sensor 10A fixed to the hand case 2 side, and a stop (displacement) of the ultrasonic head 1 is detected.

[0017]In the hand case 2, the **** control circuit shown by drawing 5 is incorporated. The DC-power-supply intermittence circuit 13 for this control circuit to perform the connection and interception to the ultrasonic oscillation circuit 12 for the DC power supply rectified by the rectification circuit 11 and the rectification circuit, It has the control circuit 14 for controlling the above-mentioned DC-power-supply intermittence circuit based on the detecting signal from the stop detection sensor 3, and the above-mentioned ultrasonic dispatch circuit 12 is connected to the above-mentioned vibrator 5.

[0018]Although the above is this embodiment, Next, since the ultrasonic dispatch circuit 12 will start via the rectification circuit 11 and the DC-power-supply intermittence circuit 13 and vibration will occur in the vibrator 5, if a power supply is switched on if the operation is described, The living body [stimulus / ultrasonic] (part) aiming at cosmetics or lean figure can be made to give vibration of this vibrator 5 via the ultrasonic cup 4 of the ultrasonic head 1.

[0019]At the time of grant (transfer) of the ultrasonic stimulus to this living body, the ultrasonic head 1 in contact with a living body needs making it always move to a living body side like the above-mentioned Reason. Therefore, the DC-power-supply intermittence circuit 13 will be in a circuit connection state, the ultrasonic head 1 starts the ultrasonic oscillation circuit 12, when movement has arisen to the living body side, and the vibrator 5 is oscillated.

[0020]In the time of the ultrasonic grant to a living body side, if sliding of as opposed to a living body side in the ultrasonic head 1 is interrupted and displacement (slight movement) of this ultrasonic head 1 stops, this halt condition will be detected by the stop detection sensor 3. That is, since outputting by the stop detection sensor 3 will become fixed if the rubbing power to the living body side of the ultrasonic head 1 is lost, If this fixed state continues for 3 to 10 seconds, the ultrasonic head 1 is stopped to a living body side, it will be judged as what supersonic vibration is given by the same part, the DC-power-supply intermittence circuit 12 will carry out an open circuit with the control signal from the control circuit 14, and starting of the ultrasonic oscillation circuit 12 will stop.

[0021]Therefore, when the ultrasonic head 1 has stopped to a living body side by this operation, the oscillation of the vibrator 5 stops, and since the ultrasonic irradiation to a living body side is interrupted, the side effects to the living body by ultrasonic stimulus can prevent beforehand.

[0022]And if sliding is started for the ultrasonic head 1 to a living body side, displacement (slight

movement) produces that ultrasonic head 1 by rubbing resistance with a living body side, the closed circuit of the DC-power-supply intermittence circuit 13 will be carried out, and the vibrator 5 will be re-oscillated by this displacement.

[0023]Therefore, when the motion in respect of the living body of the ultrasonic head 1, for example, rubbing, (sliding) has arisen, When the oscillation operation of a vibrator is continued and the ultrasonic head 1 stops on a living body side, Since it is interrupted, and it can avoid the oscillation operation of a vibrator that an ultrasonic stimulus is given in the same part of a living body side for a long time, it can prevent effectively generating of the side effects in respect of [by the concentration irradiation of an ultrasonic wave] a living body.

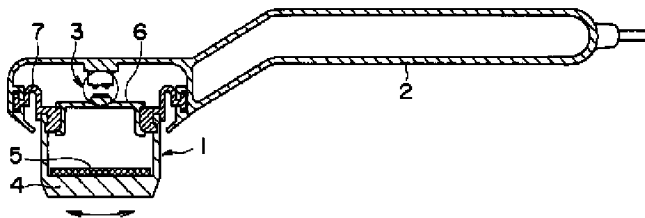
[0024]In the above-mentioned embodiment, when a motion of the ultrasonic head 1 stops, have the structure of stopping vibration of the vibrator 5 (discontinuation), but. Not the thing restricted to this but when a motion of the ultrasonic head 1 stops, for example, the output of the supersonic vibration by the vibrator 5 is decreased, and it may be made to make generating of the side effects over a living body side avoid.

[0025]

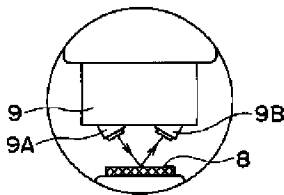
[Effect of the Invention] Thus, since according to this invention the ultrasonic wave irradiated from an ultrasonic head to a living body side will be automatically interrupted if the motion (sliding) on the living body side of an ultrasonic head stops, It is lost that concentration irradiation of the ultrasonic wave is carried out to the polar zone of a human body, and the side effects by ultrasonic irradiation can be beforehand prevented by this.

DRAWINGS

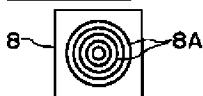
Drawing 1



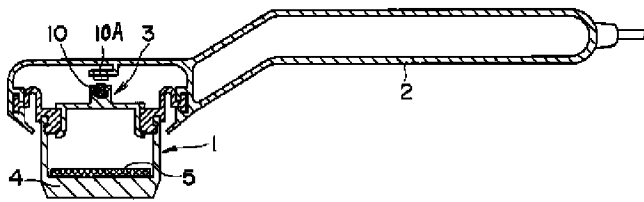
Drawing 2



Drawing 3



Drawing 4



Drawing 5

